

CONNECTIONS 28



The customer focus factor

An unforgettable anniversary year is behind us, which overwhelmingly demonstrated: R&M is fit for the future. More concentrated than ever, R&M will focus on the market in the immediate future. This applies to Switzerland as well as to all market organizations in Western and Eastern Europe, the Middle East and South and East Asia. Our presence in the markets, regions and sites of our customers and the focus on the customers is becoming more important.

The consistent customer focus is one of the distinctive and authentic strong points of R&M, which carries us into the future. It is also a characteristic competition advantage for the medium-sized, independent and dynamic family enterprise.

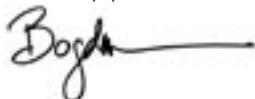
Our involvement in the highly competitive German market, highlights concrete examples of customer focus – whether it concerns industrial buildings and industrial cabling, carriers or the field of multimedia home cabling. You will find selected projects in this issue of our customer magazine Connections. Additionally, we are pleased to refer to other important references, which are documented online on www.rdm.com.

The German market organization, R&M Germany GmbH, can, therefore, look back to an extremely positive development in 2004 – in turnover and sales, and in price and margin. We are using the solid base of the company and its high-quality unique products to further develop the customer-oriented strategy. In the period from 2005 to 2007, we will position ourselves in this regard to serve the end-customer and network operators as well as IT and network planners. In addition, we will support this with qualified consultation and training offers and partner programs. We are “fit for customer needs”.

Customer focus to us also means that we offer systems and solutions with added value for concrete and actual requirements and not ideas from the science fiction lab. We believe it is self-evident that R&M offers the safest and most satisfactory products for network connections and a one hundred percent production supervision. By the way, our customers have come to expect the same.

We cordially invite you to experience live this solution and customer orientation of R&M. Pay us a visit between March 10 and March 16 at CeBIT 2005. You will find us again in Hall 15 on Booth B06.

Sincerely yours,



Gabriel Bogdan

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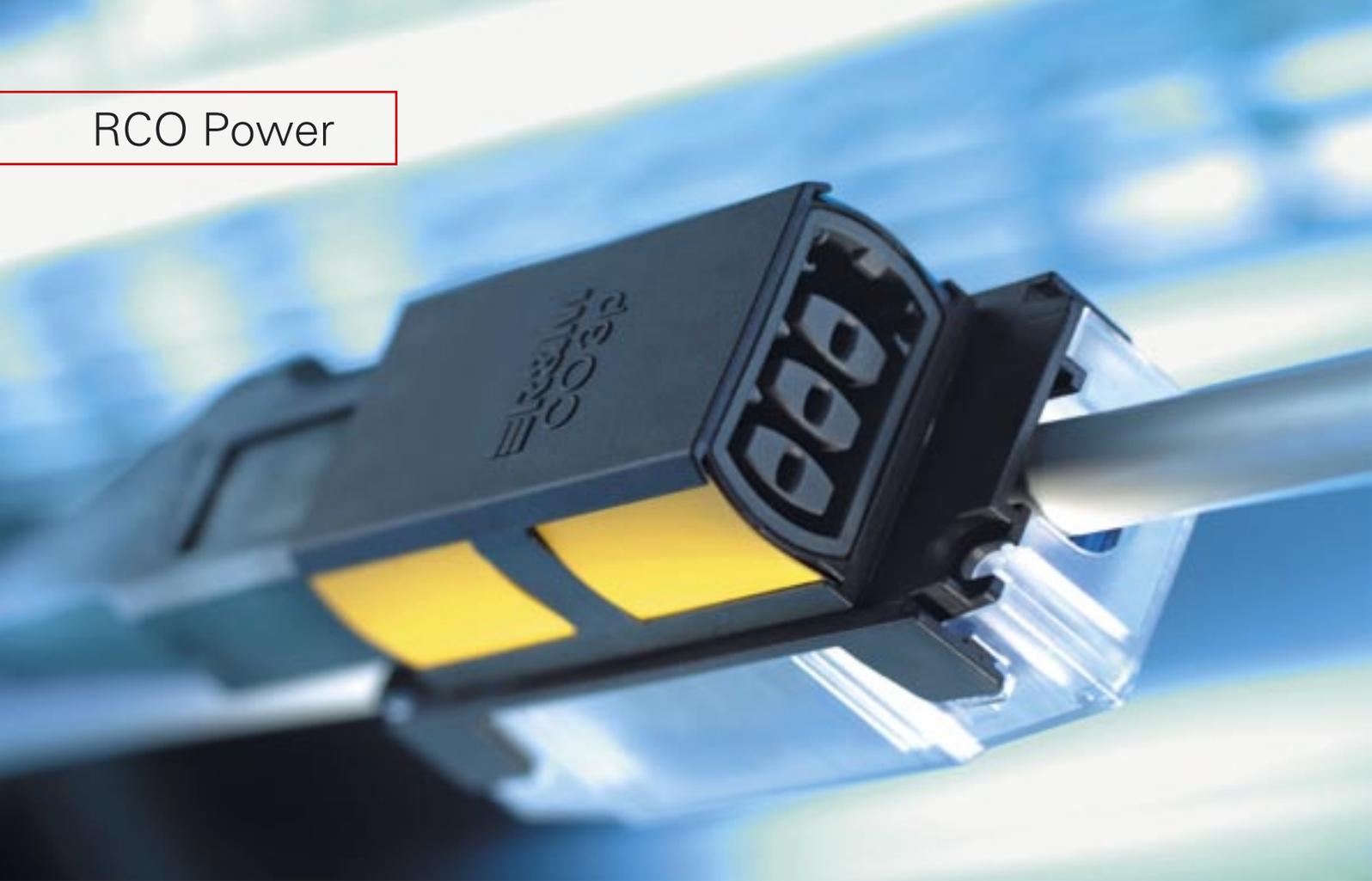
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Initial results from the partnership

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In April 2004, the Frankfurt Light & Building Fair, was the starting point of the collaboration between OBO Bettermann and R&M. Ambitious goals had been set for the joint future – cooperation on several levels. It is time, after the first half year, to look back and to present the initial results.



Goals of the partnership

The central concept of the collaboration between OBO Bettermann and R&M is the bringing together of all parties involved in an installation. In this manner, planners, installers and users receive designs for power, communication and data networks in the office environment from one source. The two businesses jointly consult on projects and offer coordinated goods and services for the planning and installation stages.



One of the eight training sessions conducted all over Germany. Specialists from R&M instruct more than 200 planners on data technology requirements at the planning and installation stages.



The partnership of OBO Bettermann and R&M makes possible complete building installations with power and data technology from one source.

Training for the first stage

The systems of OBO Bettermann (electronic installation) and R&M (data technology) are already independently so complex, that they require precise knowledge to plan installations optimally. Thus, the solution concepts resulting from the clearly expanded joint product and service spectrum are more extensive. The data technology in particular, requires detailed knowledge for the planning and installation. Therefore, the focus, at the beginning of the partnership was the intensive training of planners as the first stage. 200 planners were instructed on up-to-date knowledge of the technical foundations of data technology, the product program of R&M and their implementation, in eight training sessions, all over Germany. Additional sessions are planned.

R&M specialists instructed the OBO Bettermann team, in the same manner, in all areas of the complex data technology.

Initial joint projects

Simultaneously with the planner sessions, initial joint projects were implemented. The Higher Regional Court of Berlin was a renowned assignment for collecting initial experiences and optimizing collaboration. A further example, the Hameln county hall, is still in the process of conversion. The experiences gained from these projects will benefit future projects and help to optimize cooperation on all levels. In addition, joint developments are planned for subfloor and wall duct systems, which will offer a clear installation advantage through easy installation and short contacting times.

OBO Bettermann and R&M – a strong partnership for future projects.

Strong points of the partnership

- Medium-sized family businesses with similar structures
- Ideal supplementary product palettes and coordinated goods and services
- Collaboration on all levels of the installation process
- Joint consultation and service at the planning and installation stages
- Joint development of new solutions

Staff members are our most valuable asset

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Forty years young and fit for the future. This is the "sporty" slogan for our anniversary year. The drive clearly originates from our staff members. Their concentrated creativity, motivation and energy give the R&M family a unique character. This is particularly expressed in the company logo, which was compiled from staff pictures.

Added value: More than satisfying products and solutions

As a customer of R&M you always receive a satisfying added value: more quality and service, more security and better solutions. In brief, dependable cabling solutions. Behind this, there is an impressive team.

We consider the slogan "Get more @ R&M" as an obligation and program for our products and solutions. The added value comes not only from the innovative goods and services, which have been tested one hundred percent, but it is mainly created by the 450 staff members of R&M.

Qualified and motivated staff members are our most important asset

They are our most significant asset. We collaborate with competent, qualified and highly motivated people, who also wish to develop themselves personally, to attain our company's high-set goals.

R&M staff members are enthusiastic and like their work. They believe in successful solutions for the future. They appreciate the strong points of others and find their individual "work-life-balance" to maintain their enthusiasm and efficiency.



"Fit for the future" through enthusiasm, social and personal factors

We have a future only with healthy, enthusiastic staff members. Various training sessions and activities for physical and mental fitness are taking place within the scope of our slogan for the year "Fit for the future". As an independent, medium-sized business, which is driven by responsibility and family spirit, R&M consciously invests in the development of personnel.

Enthusiasm for R&M has been expressed particularly with creative activities in our anniversary year. All staff members at the Wetzikon site made themselves available for a photo shoot. The pictures of the individuals were merged into one picture – the company logo. You can admire the result as a poster in the middle of this publication, on New Year's greeting cards, desk planners and wall calendars.

R&M is fit for the future. You too, can experience this again live in the near future. Visit us at the CeBIT 2005.

010.3299

A ten-minute model representing 40 years of R&M

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Forty years of R&M! The anniversary in September 2004 will remain a memory for a long time. Among other things, a banner made sure of this. It showed the R&M logo. Rather than graphic designs and colors, a puzzle made from pictures of the staff members forms the company logo. The story of our development is an example for a living corporate identity and an expression of the R&M family philosophy.

A hot photo shoot with surprising consequences

It is a hot day in August. Everyone is perspiring. Spotlights turn the showroom into a sauna. Get dressed, get undressed. Make-up and powder is applied. Smile into the camera. Ham it up and do what the photographer asks. Stars like Heidi Klum and Naomi Campbell must experience all of this when they are hard at work.

But this is a unique photo shoot for R&M and instead of hard work, fun and motivation was foreseen, particularly for the staff members. In the summer of the anniversary year 2004, 293 employees of the Wetzikon site made themselves available for an extraordinary event, which resulted in surprising effects.

The idea was to create a poster to make an impression. The logo – symbol for dependable cabling solutions – was to be staged and at the same time the R&M family was to be addressed. Photographer Thomas Grünert, creator of the outstanding R&M image pictures, along with the organization team, found a creative solution: The staff members themselves would form the logo.

The showroom is turned into a studio

The showroom was quickly revamped into a photo studio. Every "star" was dressed in a white or red overall, and was put in the mood for the big moment by the make-up artist and photographer, and then posed in a typical posture in the studio cabin. The digital camera clicked. Only a few seconds later one could see oneself on the PC monitor and the most enticing motif



The showroom for once in a different light – revamped into a mobile photo studio

was selected together with the photographer and his assistant. From the pictures, which were all individually processed, the logo was subsequently put together in the Grünert photo studio. This work took days. Finally, the logo was printed on banners, calendars and New Year's cards.

The living corporate identity

For many this was their first professional photo shoot, and was really fun. Through their activities and experience, their perspiring together under the spotlights, the recognition emerged: "We are not actors for some kind of company event, but we are part of the family. We ourselves give life to R&M – and we can only do it together, because one head alone does not make a logo."

The banners were immediately a great hit. The customers and delegations were in awe at the events, guided tours and meetings on the occasion of the 40th-year celebration. Often, one heard: "This is exactly what we notice at R&M – the good working climate."

The photo shoot is still being discussed many months after the event. An in-house online databank was established in response to the demand. Every person can bring up his/her picture and can print it. The banners with the R&M living logo will continue to be seen often...



One for all

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THESE ARE NOT EMPTY PROMISES AT R&M.**

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- Star cabling topology
- Multimedia outlets in all rooms

Home wiring by R&M covers all present and future requirements of home networking.



The multimedia outlet from R&M

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www.rdm.com

Do-it-yourself home wiring



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The dream wish of the Hubert family for their semi-detached house in Hofheim was to have maximum flexibility in the utilization of outlets for media, computers and telecommunications in all rooms. Furthermore, the homeowner wanted to install the wiring himself. He found the appropriate solution at R&M.

Who knows today how the rooms will be used tomorrow?

Anke and Jörg Hubert realized their dream for themselves and their daughter to own a home in Hofheim in the Taunus. The semi-detached house, which they moved into at the beginning of 2004, offers every possibility for a young family. However, at the beginning of construction, everything was still open. There were no concrete notions about how the house would be furnished later.

Anke Hubert takes pleasure in designing, which means, that she often rearranges furniture and accessories or moves the stereo equipment and television. As a specialist in work safety, she also pays attention to avoiding tripping traps and safety risks within her own four walls. It is out of the question for her to crisscross telephone, antenna and computer cables across the floor.

Jörg Hubert is an independent real estate and building administrator and intends to conduct his business from home. He



The most modern wired owner-occupied home. "Wiring in every room, which from the outset keeps all user possibilities open – this is exactly what we were looking for", said the homeowner.

keeps options open for various rooms since the business might develop rapidly. In addition, the family planning has not yet been finalized. Therefore, long-term flexibility for room utilization and practical utilization value of the installation as well as safety concerns, were high priorities for the Hubert family.

A home wiring system with all the options for the future

As a technically interested computer user, Jörg Hubert was immediately enthusiastic about the home wiring system, which he discovered at R&M in Frankfurt. "Wiring in every room, which from the outset keeps all user possibilities open – this is exactly what we were looking for", said the homeowner.

Together with the technical advice and the practical support from R&M Germany, the first, authentic multimedia home finally came into being in Hofheim. This is not a model project, but is used daily by the family. It comprises a comfortable thought-through home network with ideally positioned multimedia outlets in all rooms, star cabling and a communication distributor.

When Anke Hubert rearranges furniture, she does not have to have the connections reconstructed or buy extension cables, she must only re-plug the devices. Jörg Hubert can expand his office at any time with a data network or move to other rooms. He only has to re-plug a few cables in the communication distributor and everything is again networked and



090.2120

Everything has its place in the clearly arranged distribution box from R&M.

connected outside to the Internet and the telephone network.

Convenience already in the installation

As a versatile handyman, Jörg Hubert is particularly pleased that he succeeded for the most part in installing everything himself. The installation convenience is an outstanding feature of the R&M home wiring system. The tangential cable entry in the multimedia outlet simplifies the installation for the technician. The cables can be put in contact with a few manipulations without any tools.

The home project in Hofheim was a test case for R&M, which completely confirmed the practical use and the everyday suitability of the home wiring system. The experiences gathered will be of great use for further market introduction in Germany.

get more

Multimedia home wiring

- flexible home network
- options for future room utilization
- easy installation



Bankers receive stock exchange TV via data cable



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Television in the workplace. Of course, the traders and customer advisers of the Liechtensteinischen Landesbank AG (LLB) are not enjoying the latest thrillers, but instead they are watching the up-to-date stock exchange prices and business news. The news are supplied by Reuters and the connections by R&M.

The trading room at the LLB in Vaduz gives the impression of being a control center of a large power plant. Workstation after workstation, monitor after monitor and everybody is concentrating intensely. However, other trends are being tracked here, such as stocks, foreign currencies, and corporate and private assets. It is not sufficient for successful stock trading to react to the market trends alone. The LLB traders and customer advisers must always be informed up-to-the-minute in order to recognize early indicators, which could influence the market trend. Therefore, they keep the news from Bloomberg, CNN or Reuters constantly in view, whether on the PC or TV monitor.

The Liechtensteinische Landesbank AG was founded in 1861 as the "Zins- und Credit-Landes-Anstalt in the sovereign principality of Liechtenstein". Since 1993 it has been a corporation and has developed from a local financial institution into an internationally active bank with subsidiaries and strong growth in private banking. Traders, investment advisers, property administrators, financial analysts and portfolio managers work closely together with the customers. Some customers put their LLB partner in charge of all their transactions; others only take advantage of the advice of informed partners.

The project: PC and TV at the trader workstation

LLB was always a leader in the furnishing of workstations. Paul Kind is in charge of it and he is also responsible for the networks and an enthusiastic cyclist (1972 member of the Liechtenstein Olympic Team). The previous solution worked with a central video switch, which prepared

the RGB signal and screen sharing. The signal was brought to the workstations via triple coax and amplifier.

The traders were able to dial in via special keyboards and monitors and change between PC programs, news service from Reuters or TV. Paul Kind is still proud of this technology. He says: "It was a primitive, but a revolutionary solution at the time." However, it could not be updated, because it was too complicated, expensive and old-fashioned.

A new solution had to be found for 70 workstations. A coax supplement for the existing communication cabling system (twisted pair) was out of the question. Paul Kind adds: "We moved into the building only two years ago and the additional coax cabling was, first of all, too expensive and secondly not flexible enough." A subsequent installation was out of the question.

Another possibility was the television signal via TCP/IP. However, since the TV must run on real time, the prioritizing would have slowed up all other applications on the network. Furthermore, the software compatibility would have become a constant problem.

The R&M solution: CATV via twisted pair

LLB and R&M have been maintaining an open partnership for years. Thus, R&M, in response to the wishes of LLB, developed something entirely novel: The CATV solution 862/8. A CATV panel in the distributor converts up to eight television channels from coax (non-symmetric, 75 ohm) to twisted pair (symmetric, 100 ohm).

This allows existing cabling to be used with RJ45 connectors. The transmission operates via still existing type 1 IBM cabling. At the workstation, a special cable with a balun reconverts the signal from symmetric to non-symmetric and feeds it to the TV device. Thus, the uncomplicated and seamless coexistence of PC and TV is possible.

Paul Kind says: "It was a simple calculation, which clearly favored the CATV panel: an elegant and slim solution, inexpensive and flexible." The LLB stock traders and financial advisers enjoy possibilities through information and observation of the news situation, which had not been achieved previously. At the same time, they can work more efficiently, which has a positive effect on customer satisfaction and the overall performance of the bank.



R&M developed something completely novel for LLB: The CATV solution 862/8. A CATV panel in the distributor converts up to eight television channels from coax to twisted pair and thus, allows an uncomplicated and seamless coexistence of PC and TV.



The trader must recognize indicators, which might influence the market trends, as early as possible. Actual market prices and busi-

Where do we go from here?

Paul Kind is always open to further innovations. At the moment, he is investigating VoIP an alternative to telephony. For data transmission, R&M has just demonstrated with the FLUKE test that copper cabling is suitable for such requirements and also for a 10 Gigabit Ethernet.

get more

Why R&M

Customer focus

– customer-specific development

Performance and quality

– Cat. 6 100% FLUKE tested

Security for the future

– system suitable for 10 GB Ethernet

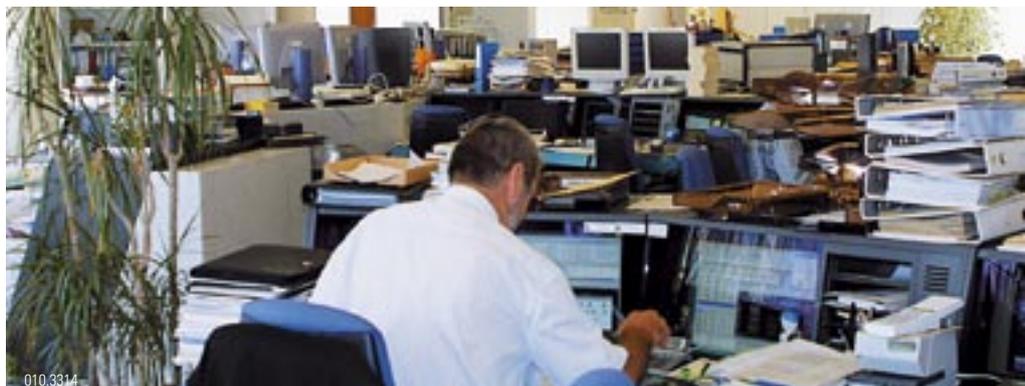


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Liechtensteinische Landesbank, founded in 1861 as "Zins- und Credit-Landes-Anstalt in the sovereign principality of Liechtenstein", in front of the historical backdrop of the town of Vaduz.



ness news are always within the trader's and customer adviser's view on various monitors via TV and PC.



010.3314

Stocks, foreign currencies, corporate and private assets are the subjects of the day in the trading room at LLB. The demands on a stably functioning network are high. The LLB traders and customer advisers must always be informed up-to-the-minute.

Everything is well connected

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Three sites of the German Hartmann group in the Czech Republic were equipped with R&M networks according to the Cat. 7 standard. Two enterprises meet up, which literally stand for the same vision: to optimally connect people.

The Hartmann group, operates worldwide in medical and hygiene products as well as herbal health products. The name, which suggests a long tradition, goes back to a company for wound dressings, which was founded in 1818 in Germany by Ludwig Hartmann. At the time, the 52-year-old man, carried out, what today would be called, a management-buy-out. He took over the textile company, where, up to that point, he had worked in an executive position.

Everything from wound dressings to cosmetics

The company specialized in bandaging materials and continuously expanded its expertise during the course of its development history. Today, the worldwide active group markets a series of products in fields, such as wound dressing, patient and surgical hygiene, feminine hygiene, cosmetics, skin care and others. In 2003, the Hartmann group increased group currency adjusted sales by 5% to just under



Mr Radovan Fikr (left) – IT Manager (Hartmann RICO) and Mr Pavel Nevesely (right) – Managing Director (Krugel Exim CZ)



1.3 billion Euro (approximately 2 billion CHF). The group employs approximately 10,000 people in 38 countries.

Connected to the future

In 1991, the Hartmann group and the long-established Czech business Rico, also specializing in health and hygiene, merged into a joint venture. The result was the Hartmann-Rico Company, which operates four sites in the Czech Republic. Three of the four sites had to be equipped with a new network infrastructure due to the greatly increased data volume. The goal of the extensive investment was to increase the bandwidth while simultaneously increasing network security. R&M Austria received the assignment to implement this project because R&M products were already the standard at Hartmann-Rico since 2001. Based on the demanding customer requirements, shielded Cat.7 cables and Cat.6 modules were used for the installation.

Quality, flexibility and security

Radovan Fikr, IT department manager at Hartmann-Rico sees the advantages clearly: "With R&M we can rely on guaranteed quality. Furthermore, the modularly configured product range allows solutions, which conform exactly to our individual needs." According to Hartmann-Rico, additional advantages are the full downward and upward compatibility of the R&M products. For example, the new network can, at any time, easily be upgraded to fiber optics. Not to forget, the particularly important network security. R&M scored high with their Plug Guard and Safe Clip products, which efficiently prevent unau-

thorized or erroneous disconnection of the network connection. The firm of Jaroslav Plhák acted as the local certified partner, and the distributor for the R&M products was Krugel CZ. The next project is already planned for next year: another network installation in Cat. 6 with 500-600 ports.

Network Hartmann-Rico Facts & Figures

Customer

Hartmann-Rico a.s. Czech Republic

Distributor

Krugel CZ

Installation

Certified R&M partner Jaroslav Plhák

- cable Cat. 7 light S-STP LSOH
- shielded module Cat. 6
- shielded patch panel 24 Cat. 6
- shielded global panel 60 Cat. 6
- 2 000 ports

The "quickest" tower in Vienna

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High-speed Internet, voice telephony and video on demand from the data outlet: A Viennese business builds an apartment and office building with a model impact. The latest reference project is a fully networked high-rise building with more than 200 apartments.

Established telecommunication providers, such as the ex-monopolist Telekom Austria, should watch out: The young company, CyberTown, makes the direct connection of apartment and office buildings to their company's own fiber optic network possible and combines this with a Cat. 5e Gigabit data line in the building. All services – data, voice and video – are digitally supplied. The connection to the Internet takes place without a modem, which allows bandwidths, of which normal home users could only dream up to now. For the first time, also, video-on-demand and IP telephony can be implemented at high quality.

Collaboration with R&M

The latest model project of CyberTown was implemented in collaboration with R&M Austria. It is a high-rise building on



In a high-rise building of CyberTown at Wienerberg, tenants communicate to their heart's content.

the southern city limit of Vienna, with a view of the city as well as of the vineyards of Lower Austria. The entire in-house Cat. 5e installation with Gigabit capable copper data lines was carried out by R&M. Ten kilometer copper wires were laid and in total 408 RJ45-type connections were installed in 204 apartments. Thus, CyberTown can make all services available via Ethernet.

Broad, broader, broadest

All CyberTown buildings are directly connected with the VIX (Vienna Internet Exchange) via the company's own fiber optic network. Therefore, the direct Internet connection of the computer in an apartment is possible without a modem. The connection of fixed network telephony takes place via voice-over-IP, which offers reduced telephone costs and completely new convenience and possibilities: Remote and local contactable voice box (digital answering machine), web interface for the configuration of the telephone, such as re-routing, fast dial etc. The tenants have a choice of three bandwidths: 128 KB, 2 Mbit and up to 100 Mbit are available, depending on the customer's desire and budget. By the way, with the Internet connection, high transmission rates are immediately available for downstream and upstream.

Among the services, which CyberTown plans to make available in the future, are, for example, a central file server for all tenants. Thus, all users will have the possibility to store a copy of important



CYBERTOWN
INFORMATION TECHNOLOGY GMBH

data in the central server and prevent data losses, due, for example, to a virus attack on their PC. An in-house intranet for communication between the tenants, also presents no problem from a technical standpoint.

The third man sends his regards...

Furthermore, the technology of supplying the CyberTown buildings with optic fiber is a remarkable innovation within Vienna. It came into being through a collaboration between the Technical University of Vienna and the competent communal government responsible for the canalization. This is a robot, which – like the legendary "Third man" in the cult film of the same title – uses the Viennese canalization for his purposes. He moves fully automatically through the canalization system and attaches empty tubes to the ceiling. Subsequently, the fiber optic line is blown through the empty tubes and the building is tapped.

CyberTown will concentrate on city development areas in Vienna to offer the new tenants there top telecommunication solutions according to the WienerbergCity & Monte Laa models.

get **more**
Why R&M

Security for the future

– Cat. 5e 10 GB Ethernet capable

Performance and quality

– Cat. 5e 100 FLUKE tested

Customer satisfaction

– Optimal customer care



Government network in the Valais

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Where generations of workers sewed innumerable threads of yarn, 14 kilometers of fiber optic cables and 27 kilometers of copper wires were laid. In Sion, the capital of the Canton of Valais, a former clothes factory was transformed into an ultramodern IT center, where all wires of the cantonal government network come together. R&M supplies the cables and optic connectors.

Approximately three years ago, the green light was given for an extensive project: The overhaul of the government network for the Canton of Valais. It was to interconnect the 2400 PCs and 4000 telephones of the administration, the justice department and of some police stations between Brig and Monthey in an autonomous, inexpensive and reliable manner. Since the end of 2004 this system has been completely operational, centrally controlled from the computer service center in Sion.

Quality improvement and cost reduction

"Quality improvement of the infrastructure with consequent cost reduction was



010.3306

In a completely unpretentious manner, the sign indicates one of the most modern computer service centers in Switzerland.

our goal" says Bernhard Murmann, Section Manager for telecommunications of the cantonal computer service center. Thereby, quality takes on many aspects. First, there is a technical aspect: "We have established functional operations for all three layers of the network – for the physical, the security and for the network level. Thus, we set a high quality standard from the outset.

Autonomous, central and secure

Doing without leased lines is also an innovation. The data are transferred via dark fiber, the Internet connection of 100 Mbits/s is furnished by a selected pro-

vider. "This gives us cost transparency and security", explains Murmann. For security reasons, the WLAN "even in the future, is not a point in question for the entire cantonal network" according to Murmann.

Only four people centrally monitor the network from Sion. They have remote access to all routers and switches at the points of presence. At the same time they provide technical support. There are, furthermore, no barriers between the German-speaking and the French-speaking parts of Switzerland; all four people speak fluently German and French and as



010.3340

left to right: Bernhard Murmann, Section Manager for telecommunications of the Cantonal Computer Service Center, with Walter Kurzen of R&M and Stéphane Bonvin, Telecom SA.



010.3306

Loose tube cable from R&M. In total length there are 14 km of cable.

a first-level helpdesk they can direct all inquiries immediately to the competent person – this, too, is an aspect of quality.

The central computer center in Sion is housed in two buildings. One of the buildings is additionally reinforced with concrete pillars against earthquakes. The computer center itself is located there underground in kind of a room within a room – like a safe, protected from gas, fire and water. This is of the utmost importance, because the backups are running there as well. Eight terabytes of data can be stored and secured.

The power supply is duplicated; two high-tension wires are passed through a transformer to two separate connections with 3 x 400 V, which supply a full 800 A. In emergencies a battery is activated. The air-conditioning system is operated via the groundwater for ecological reasons. For safety reasons, the system control is completely separated from the network.

An installation consortium, formed from the TSA (Telecom SA) Valais and Bitz Elektrizität, laid 14 km of optical loose tube cables type MM OM3 and SM OS1 from R&M over several months. As optical connections, E-2000™ compact single mode APC 8° and E-2000™ compact multimode OM3 from R&M were used.

R&M is on the top with innovation, customer focus and quality

Why was R&M chosen? Bernhard Murmann says it in short: "Innovation, customer focus and a high quality standard." Partnership and customer focus are the top priority for him. This applies to the partners for all three network levels. Then "only the careful selection of materials and the outstanding product quality make the central administration of such an infrastructure possible with four people."

Walter Kurzen of R&M, in the National Sales Enterprise department is responsible for French-speaking Switzerland and here is how he sees it from the point of view of marketing: "We could not only offer materials, but also technical support – and this with great ability to deliver". Therefore, for two years now, Murmann has been among his satisfied customers.

Cost reduction remains an issue

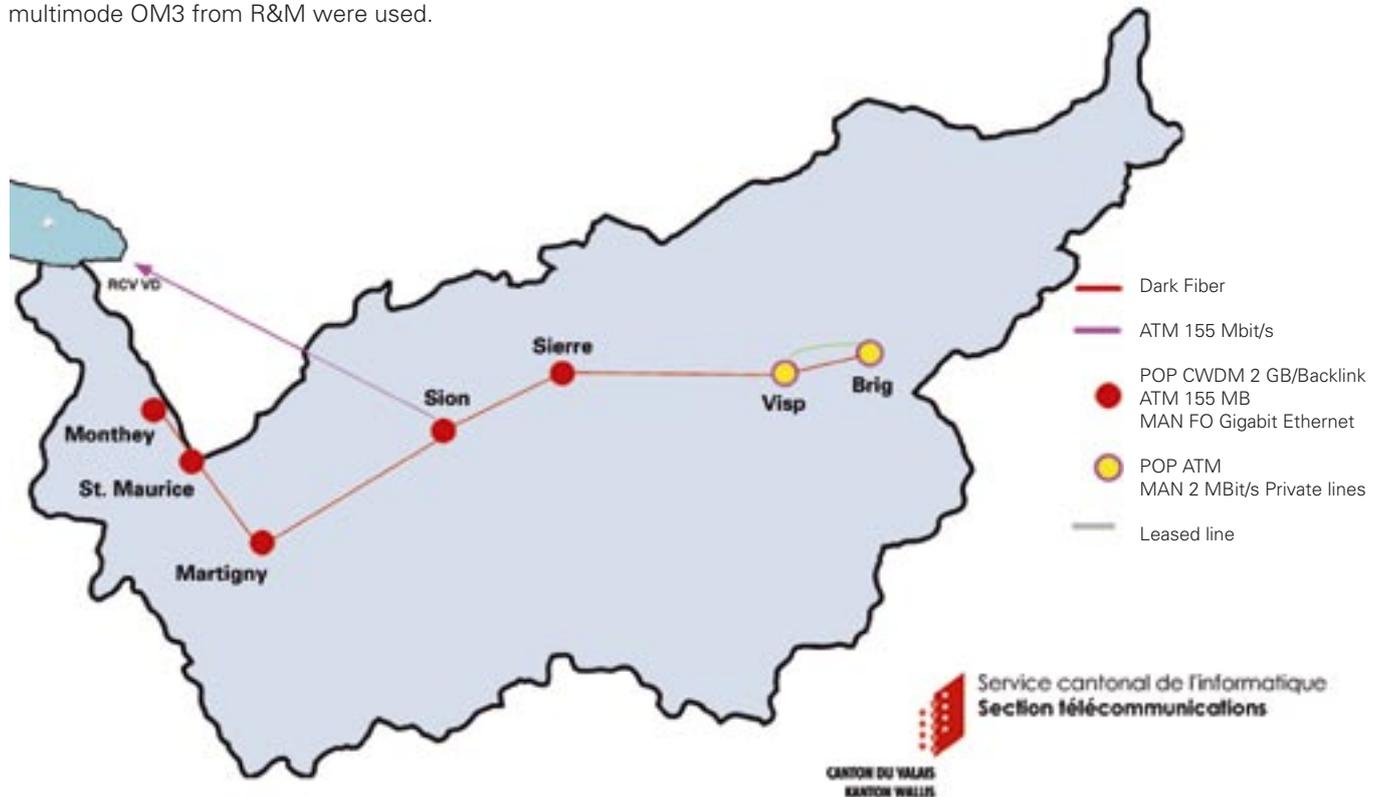
Bernhard Murmann expects further reductions of the operational costs through ever newer technologies. Thus, IP telephony will be introduced in the near future. For the current year, a project is in the wings, which is supposed to save costs for the entire canton: Cantonal elections via Internet.

getmore
Why R&M?

- Innovative solutions
- High quality standard
- Customer focus
- Technical project support
- High ability to deliver



E-2000™ and E-2000™ Compact manufactured under license to Diamond SA, CHE-6612 Losone



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The government network of the Canton of Valais. Contrary to what the graphic picture might suggest, the individual POPs (points of presence) are starlike connected with the central computer center in Sion. An ATM cross-connection leads to the network of the Canton of Vaud and continues to the Federal Government. On a site (MAN) between the two buildings runs a Gigabit Ethernet: sufficient to run applications locally on the PCs (all equipped with Fast Ethernet, that is 100 Mbit/s) or centrally on the servers (all networked with 1 Gbit/s).

SolarHausPlexus® – Multimedia for retrofitting



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R&M global solutions to only new building projects, but to retrofit an existing installation to the multimedia cabling system from R&M.

Successful conversion

In collaboration with the technician and after studying the plans, the existing cabling was analyzed in a first step. As found in most cases, the CATV and telephone wiring were parallel. It was our goal to merge the two separate infrastructures with each other and – where practical – to continue using it.

The existing coaxial cables were left in place and continued to be used for CATV. In place of the telephone lines, an unshielded data cable Cat. 5e was pulled to every multimedia outlet. Thanks to the compact design form of this data cable, up to four cables fit in an existing installation tube with only an eleven-millimeter clearance. In spite of serious doubts initially as to cable pulling, the installation was able to be carried out as planned, without any problems and to the full satisfaction of all parties involved.

The SolarHausPlexus® is an innovative housing concept in Winterthur. It combines extremely low energy needs with high living comfort. The multimedia cabling is just as modern: All new SolarHausPlexus® projects are equipped with the R&M cabling system. The success story continues...

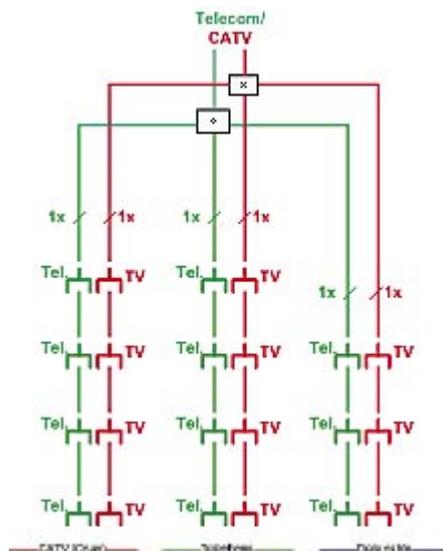
Retrofitting is possible

In 1995 when the first buildings were erected according to the SolarHausPlexus® standard, the multimedia cabling systems were not yet available. The installation of the communication infrastructure was therefore, still conventionally solved via separate paths for telephone/ISDN and CATV.

This was also the case for Giovanni Cerfeda, Winterthur, architect and inventor of the SolarHausPlexus® construction concept and occupant of one of the first buildings built according to this concept. It was also his proposal not to limit the



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Existing telephony and CATV bus installation

Investment for the future

The retrofitting for multimedia cabling has numerous advantages for occupants and proprietors. Telephone, network and television connections are integrated in one single outlet and are available in all rooms equipped accordingly. Family members have broadband access to the Internet and can even use the Gigabit Ethernet – without the danger of electrosmog of a wireless LAN solution.

In addition, the clean accommodation of all active devices in a central communication distributor guarantees maximum flexibility during use and free choice for selecting a telecommunications provider without expensive installation adjustments. Last but not least, the multimedia cabling from R&M means an increase in value of the property – including a guarantee for the future.

The success story continues...

Subsequently to the successful completion of the installation, retrofitting is now being offered to the other SolarHausPlexus® proprietors. Prerequisite for a successful migration is a properly laid base tubing of at least eleven millimeters in diameter. Based on the low investment costs it is to be expected that many proprietors will opt for a new multimedia cabling system from R&M.

get more Multimedia cabling

Flexibility

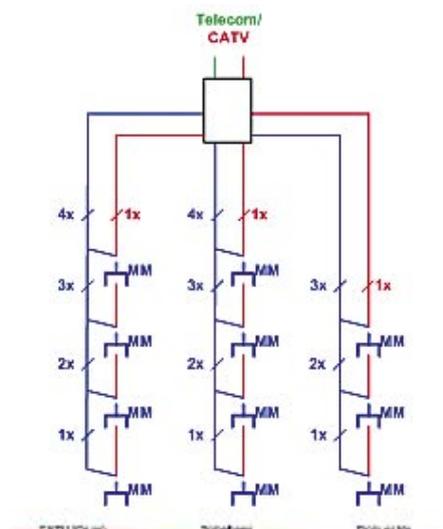
- Ethernet, Internet available in all rooms – all connections from one outlet
- Easy retrofitting is possible

Performance

- Maximum bandwidths up to Gigabit Ethernet

Guaranteed future

- Increase in value of the property
- Health, no electrosmog



010.3326/010.3320

Migration to multimedia cabling with multimedia outlets (MM)



POF model apartment: High-tech in old buildings

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Polymer optical fibers (POF) move into the home environment – now also in Germany. The POF application center renovated an old four-room apartment in Nuremberg and with low cost plastic fiber “upgraded” it to the first German POF model apartment. Nine leading companies from Europe and Japan participated in the installation, among them R&M.

International conference on polymer optical fibers (POF) 2004

The occasion was the international POF conference 2004, which, after Tokyo in 2002 and Seattle in 2003, this time took place in Nuremberg and R&M was represented with two contributions. Specialists from approximately 20 countries exchanged their experiences and leading companies presented their developments.

R&M contributions to the POF conference 2004

Influence of POF fiber dimensions on connector design

Hannelore Hirscher, R&M.

Download from www.rdm.com > Enterprise Cabling > RCC45 > Technology

First POF house in Switzerland

Thomas Richner, R&M.

Download from www.rdm.com > Enterprise Cabling > RCC45 > Applications

Rarely was the distance between theory and practical experience shorter than in Nuremberg: A shuttle bus brought interested people from the conference site to the POF model apartment, which was only three kilometers away.

In charge of the conference and the model project was the POF application center – in short POF AC –, an institute of the Georg-Simon-Ohm Technical University of Nuremberg, which is promoted by Bavaria within the scope of the campaign “High-Tech-Offensive Bavaria”.

Site of possibilities

The model apartment in the Fuggerstrasse Nuremberg, with a living room, study, two children’s rooms and balcony, is designed and furnished like many apartments for today’s family. The POF cabling, which is very well hidden, turns into a familiar companion like the power cable and telephone cord.

Only the applications are noticeable: Data transfer and multimedia practically without any limits within the apartment and with the exterior.

Manufacturers and research institutes can put their prototypes to the test in the Nuremberg apartment and the project partners can train technicians on new products. Interested private individuals can collect information on what well-known companies already have to offer today, such as, Infineon, Mitsubishi or the Fraunhofer Institute for integrated circuits. Not to forget R&M, whose RCC45® multitalent carries the Fast Ethernet and FireWire signals from a camera.

Added value for everyone

Those who see the apartment get a foretaste of how POF can change the home environment in the future without creating the atmosphere of a High-Tech switchboard. The plastic fiber supplies a great benefit with cabling at relatively low installation costs.

get **more**

POF

More convenience with the installation

- flexible sturdy cable with a small diameter
- simplest connection technology with screw ferrules
- no special tools required
- connector with few single parts
- multiple-use ferrules/connector

More security

- reliable and reproducible connection technique
- EMV
- no danger of injury thanks to the large fiber diameter
- relatively dust proof



How the added value is described, depends on the point of view: life-improvement, rental value or real estate value. Regardless, when investing, standard compatible solutions with a long service life should be considered.

You can find additional information on the POF model apartment at www.pofhaus.de.



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At a glance, the products installed and shown in the POF model apartment: multitalent RCC45® and the compact Fiber Optic Plug SC-RJ.

Arabian Nights in the third millennium



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It used to be pearl farming which was behind Abu Dhabi's lively economy. Then came the discovery of oil. But the United Arab Emirates are also investing in innovation in order to be prepared for the future.

Abu Dhabi is one of the world's most modern cities. It is the seat of government and the economic hub of the United Arab Emirates. Here you will find the centers of the important oil enterprises, and foreign diplomatic representatives. The city's modern architecture is literally one of its outstanding features. High-rise office towers with their glass facades compete with historic mosques for the attention of locals and visitors alike. The many gardens, parks and avenues provide an impressive green contrast, unexpected in a desert city.

The wealth created by the oil economy has been cleverly used to create a healthy commercial and economic environment apart from the oil industry. A few years ago, tourism joined these economic sectors and in the meantime has gained increased importance in the region. Abu Dhabi is a popular destination with European tourists who want to spoil themselves with a touch of luxury.

With innovation into the future

The inhabitants of Abu Dhabi are not content to maintain the status quo. There is ongoing investment in modern infrastructure, including the area of network technology. Abu Dhabi's prosperous population demands high standards and is only content with investments that are considered state-of-the-art both at present and in the near future. One example of this is the newly-built luxury villa of one of the most experienced network managers in



The very attractive mansion in Abu Dhabi which was connected with R&M's Multimedia outlets.



Abu Dhabi – one of the world's most modern cities, where historic mosques stand next to skyscrapers

the United Arab Emirates. As the specialist in enterprise cabling, for the ministry he is working for, he has appreciated R&M quality for quite some years now. For his magnificent private villa, he wanted a network which leaves nothing to be desired. He decided in favor of structured home cabling in combination with the multimedia outlet from R&M. A total of 12 bedrooms and 6 other rooms were networked, with 40 multimedia outlets being used, giving our specialist the opportunity to control all services (voice, data, CATV, CCTV, Radio, ...) from his personal «IT fortress». An example of just how in Abu Dhabi innovative network technology and luxury out of Arabian Nights go hand in hand...

get more
Multimedia Outlets

More comfort

- Structured cabling for the residential area

More flexibility

- Generic infrastructure for all applications
- Expandable at any time
- Absolutely future-proof



Two of a kind

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As one of the most important banks in Central and Eastern Europe, Zagrebacka banka stands for high quality of service, security, and liability. For the installation of its new IT-network the company searched for a partner with the same attributes – and found R&M.

Zagrebacka banka began its operations in 1914 as City Savings Bank. Since 1977 it has been doing business under its present name. Zagrebacka banka is one of the leading banks in Central and Eastern Europe with regard to quality of products and services as well as technical innovations and the number of customers. It operates an extensive branch network and the largest ATM network in the country. It accounts for 26% of the total assets in the Croatian banking sector. Zagrebacka banka has been successfully expanding its business beyond Croatia. The member of the Zagrebacka banka Group operating in the neighbouring market of Bosnia and Herzegovina, UniCredit Zagrebacka banka, presently accounts for 15.5% of the local banking market's assets.

Strong development

Since its establishment, Zagrebacka banka has been continuously strengthening its profile as a transparent and reliable business partner. In 2002, through the strategic partnership with UniCredit Group and Allianz, Zagrebacka banka further strengthened its international presence and recognition, while retaining its strong identity and corporate culture. In 2003, Zagrebacka banka retained its leading position in the Croatian market in all business segments despite the intensified competition, and it strongly outperformed its competitors in Bosnia and Herzegovina.

Since its establishment, Zagrebacka banka has been continuously strengthening its profile as a transparent and reliable business partner and has been the first bank in Croatia to be awarded a credit rating by international credit rating agencies in 1997.



Zagrebacka Banka in Zagrebs city center

Ready for 10 Gigabit Ethernet

The bank's dynamic development made it necessary to improve the company's IT-infrastructure in terms of bandwidth as well as security. Therefore the bank's strategic partner Combis investigated the market and found R&M solutions fitting to all recommendations of Zagrebacka banka. After the network-installation in all branch offices throughout the country the decision was taken to install a Cat. 6 shielded cabling network in order to be ready for 10 Gigabit Ethernet. The whole project was carried out in the afternoon, during the nights, and at the weekends. So the company's business could be continued without disturbance during the whole installation time of two months and five days only.

The implementation was done by Vjekoslav Lovrovic, certified R&M QPP-Trainer, specialized on Data- and Telecommunication networks. He designed and controlled the installation in all offices, of which more than 3000 drops were installed at Zagrebacka banka Headquarter.

The installation in more than 110 branch offices was done in Cat. 5e. Zagrebacka banka now has a most reliable, fast and future-oriented IT-network which enables the company to grow even more successfully than it has done in the past.



get more

Why R&M?

Future proof

– 10 Gigabit Ethernet capable

Speed

– Quick in project realization

Security and Quality

– Installation through R&M certified Partner



The COMBIbox for large scale operations

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R&M offers their customers a highly integrated overall solution for secure, flexible and rational building and office cabling with "Extended Office Cabling" (EOC). The COMBIbox is a vital product in the EOC program: a modular installation system for double stand floors which allows multiple connection combinations. The utilization at IBM in the development center in Böblingen demonstrates how efficient this box is.

Fully cabled

More than 2500 COMBIboxes installed in over 800 floor boxes, with 4800 RJ45 and the same number of FO (fiber optic) connections are integrated into an overall infrastructure of a total of 33000 RJ45 ports with 10800 actively switched connections. Innumerable kilometers of copper and optic fiber cables, thousands of networked PCs and servers including the required power supply; impressive numbers, which confirm the complexity of the installation.



010.3327
IBM development center in Böblingen

This operation has the function to test, improve and develop large PC computer networks, servers, operating systems and software.

Errors cost time and money

IBM tests all components and all software options in an identical structure prior to installing computer networks with hundreds of PCs at the customer location. Complex application programs are running for days in order to simulate every possible case, recognize errors and program improvements. In such test cases, it may occur that the failure of single components is caused by a mistake in the network installation. Then, the test must be restart-

ed. This costs time, which is no longer available and causes costs, which were not projected.

Security has priority

Therefore, the reliability of the network connections has top priority. This is not a simple requirement in view of the great number of connections. The frequent changing of the configuration and the occupying of numerous jacks with Y adapters represent a constant strain on connections and connectors. Therefore, the COMBIbox from R&M, which fulfills the necessary high-quality standards, can also guarantee long-term secure operation.

get more
EOC, COMBIbox

- **Safety:** high operation security in daily grueling testing even with frequent reconfigurations
- **Flexibility:** flexible assembly of the floor box and COMBIboxes for optimal adaptation to the changing requirements
- **Rapidity:** short reconfiguration times allow quick changing of the test environment and cause only short downtimes



010.3303

Installations in numbers

- more than 800 floor boxes
- over 2500 COMBIboxes
- 4800 RJ45 connections
- 4800 SC bi-directional connections
- 2400 outlets

Distribution box

Distribution box: all cables from the floor boxes merge here. In the picture on the left an employee of GA-tec, the installation firm certified by R&M, is at work.

High flexibility is demanded

Apart from security, high flexibility is, in particular, needed. Constantly changing configurations require an installation technology with which a multitude of connections can quickly and securely be reconfigured. The flexible wiring of the COMBIboxes in the floor boxes and the easy installation of the connections for RJ45, FO and Power particularly allow the customer a quick and independent reaction to the changing requirements in the test environment.

The COMBIbox in operation

Four COMBIboxes are mounted in search of more than 800 floor boxes on a 4-position base FB COMBIbox. Three of the four boxes are usually occupied by six RJ45 jacks each, six SC bi-directional optic fiber connections and 3 Schuko outlets. The fourth COMBIbox is equipped according to need with additional RJ45 or SC bi-directional connections or used for the mounting of additional Schuko outlets for UPS (uninterruptable power supply).

For R&M quality is implicit not only for the products used, but also for the installation. Therefore, the installation of the floor boxes and distributor was carried out by GA-tec Gebäude und Anlagentechnik GmbH, which certified by R&M, guarantees an optimal implementation of the installation assignments.

The past and the future

R&M can now look back on a successful collaboration with IBM Böblingen over several years and will be able to observe the quality of the installed systems for a long time to come. It will also be necessary in the future to expand the existing installations and adapt to new requirements. R&M will also continue to contribute to success in this process with its products and services.



Cable outlet

Fiber optic cable (yellow), copper cable (white) and Power (brown) are fed to the exterior via the cable outlet. To allow for quick reconfiguration, a cable channel was not considered.



COMBIbox seen from above

Opening of the floor boxes with view of the installed COMBIboxes. On the right the RJ45 connections with Y adapters; top left, the unwired SC bi-directional optic fiber connections and 3 Schuko outlets. Lower right, a Schuko outlet can be recognized.



COMBIbox seen from below

A glance behind the scenes of the double stand floor: each base carries four COMBIboxes and is screwed to the floor plate with a metal bracket. Base support, floor plate and cover are grounded.



Y adapter connection

Initially, these were only considered temporary, meanwhile, however, the Y adapters are used at many positions. The necessary space is available and the mechanical stability is guaranteed.

Traversing the Lötschberg with VS Compact

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The Lötschberg base tunnel represents a project of the century and a high point of Swiss tunnel engineering. Telephony, control system and data, radio and safety engineering must operate absolutely reliably for decades. Therefore, the first choice for Ascom Network Integration was the VS Compact cabling system from R&M.

The network behind the scenes of the tunnel and railway line

In 2007, when the Lötschberg base tunnel begins operation, a powerful communications network, the size of a Wide Area Network will work behind the scenes of the train traffic. Ascom Network Integration, as a partner of the ARGE Bahntechnik, by order of the BLS AlpTransit AG, is installing transmission technology for telephony, data and the public address system.

Among others, 16 telephone systems with more than 700 telephone lines are part of the projected communications network. Their purpose is voice communication in the tunnel and between the operation centers at the entrances. A transit ring and two primary rings will bridge the great distances. The primary rings connect the control terminals, the tunnel control system, technology centers, radio stations and telephone systems and have a capacity of 155 Mbit/s (STM-1).

R&M products used

The following components and products from R&M will be used in the communications network of the Lötschberg base tunnel:

- VS Compact distributor system
- Special 60-wire interconnecting cables
- Copper patch cable with RJ45 for telephony

Singlemode duplex fiber optic patch cable 9/125 μ with E-2000™ for I/O concentrator

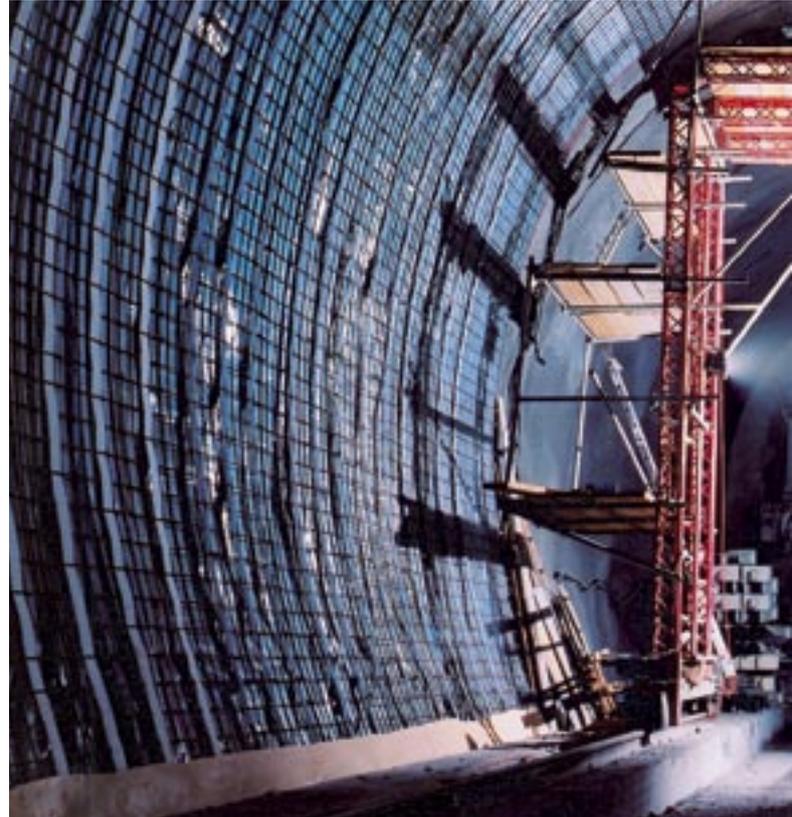
Secondary rings extend the interfaces into the cross tunnels. They connect service and window tunnels, emergency exits, monitoring and control systems for doors, safety systems and much more. 366 loudspeakers, which are used in emergencies to announce evacuation instructions, are also networked.

Maximum safety requirements and tropical tunnel climate

Since utmost safety is required in tunnel operation, high demands are placed on the overall train technology as well as on the installation components. They not only need to be available at an extremely high level, have a long service life and be easily replaceable, but, for example, they also must withstand an almost tropical climate. The temperature in the concrete tubes of the Lötschberg base tunnel will always be higher than 35°C and the humidity can reach 80 %.

Therefore, quality and operational safety were vital criteria for selecting the suppliers and components. "That's how, R&M got involved", according to project manager Stefan Moser and technical construction manager Bernhard Zaugg of Ascom Network Integration. R&M was prepared to offer the extraordinary warranty and support the customized solution offered by Ascom. At short notice and in a flexible manner, samples of specifically adapted distributors were made available for tests in Berne.

This was impressive and Ascom decided to work with R&M. The supply agreement was signed at the end of October 2004. Distribution systems and cabling from the VS Compact line of products will be used in the Lötschberg base tunnel. In



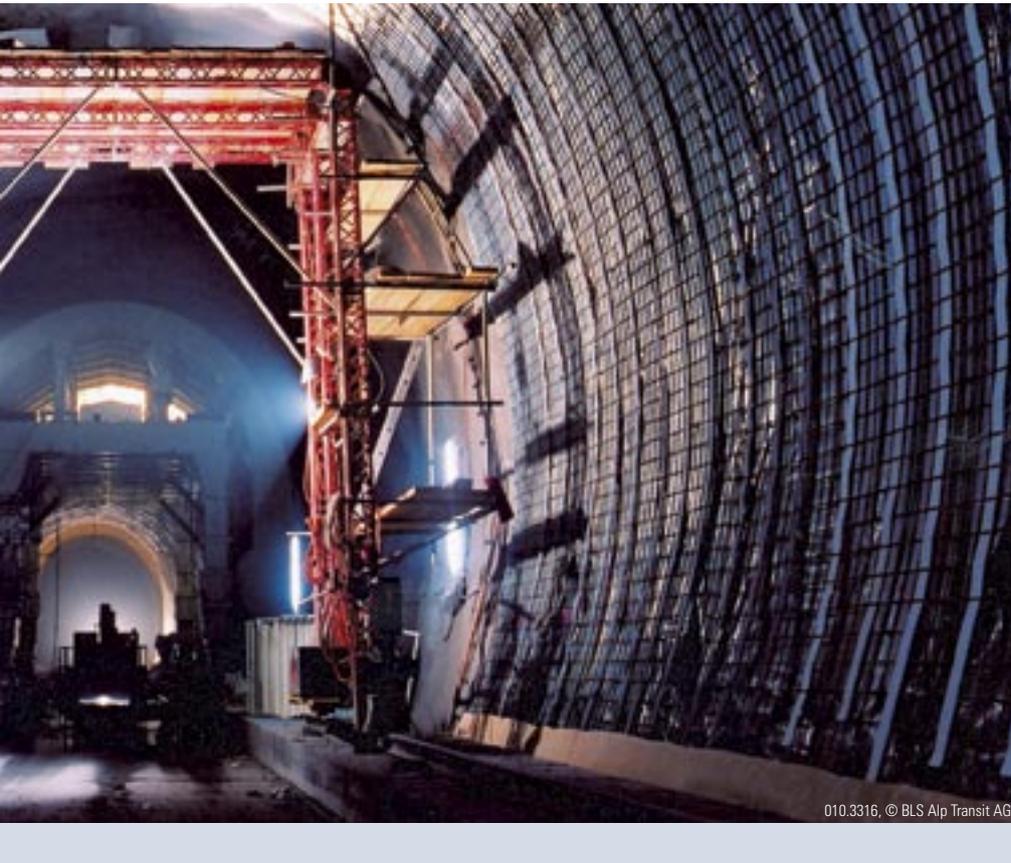
Testing the inner tunnel shell on the Mitholz test track

addition, a crucial advantage of VS Compact was, that the stranded connectors can be conveniently and reliably wired.

The ability to deliver and flexibility are being put to the test

However, this was only the first obstacle. In additional "fire drills", R&M had to prove flexibility and the ability to deliver, since, once the installation is under way in the year 2006, everything must fit and no bottlenecks or delays may occur. "High quality deliveries on schedule are crucial for us and our customers," says Bernhard Zaugg, subproject manager of Ascom Network Integration. Stefan Moser explains: "A just-in-time production would certainly be more acceptable for a supplier. However, in this case we are not dealing with standard materials, therefore, entirely different requirements prevail." Since construction and installation takes place in the tunnel at many sites at the same time, modifications and moving of deadlines will have to be expected.

"This is an enormous challenge for us, which we gladly accept," says Martin von Niederhäusern of R&M sales Switzerland. The intensive collaboration during the planning and development phase has demonstrated, that one can rely one hundred percent on the contact at Ascom. "The chemistry is right."



010.3316, © BLS Alp Transit AG



010.3318

Stefan Moser (Ascom), Martin von Niederhäusern (R&M), Bernhard Zaugg (Ascom)

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Why R&M

- Customized solution
- Quality and security
- Flexibility
- Ability to deliver
- Special warranties
- Reliable collaboration



010.3317, © BLS Alp Transit AG

Preparation for blasting

New alp transit – the Lötschberg base tunnel

Within the scope of the Swiss transportation design NEAT (Neue Eisenbahn Alpen Transversale) [new alp train transit], BLS AlpTransit AG is constructing the Lötschberg base tunnel by order of the Federal Authority. It leads from Frutigen in the Kander valley to Raron in the Valais and plays a pivotal role in European and Swiss Transportation design.

The tunnel has as its objective to move from the roads to the rails the transit freight traffic, which crosses the Alps. The tunnel is 34.6 km long and is designed as two single-track tubes, directionally separated. Operation will begin in 2007. The trains will go through the tunnel at speeds of up to 250 km/h. The Lötschberg base tunnel is to be adapted to the growing needs through several expansion stages. The total tube network will eventually extend over 90 kilometers. The breakthrough will take place in spring of 2005.

Ascom Network Integration: Connecting ideas and people worldwide

ARGE Bahntechnik by order of BLS Alp Transit entrusted Ascom Network Integration with the installation of transmission technology for telephony, data and the public address system.

The Ascom Network Integration division is among the leading service providers and system integrators for secure, custom-tailored network solutions for voice, data and video communications. Recognized specialists, broad technological know-how, experience in handling complex projects and familiarity with the requirements of the customers guarantee customized solutions with the highest quality standards – from consultation to design, implementation to maintenance and start-up of operations.

E-2000™ and E-2000™ Compact, manufactured under license of Diamond SA, CHE-6612 Losone

A firewall alone is insufficient!

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Viruses, worms and Trojans are in the headlines everywhere. The worldwide economic damages caused by them are estimated to be in the hundreds of millions of dollars. However, the greater threat for companies lies elsewhere: 70% of all network interruptions are attributable to cabling deficiencies.

The commotion is extensive, and rightly so, when a new computer virus traverses the world. However, there are other, even more dangerous threats than Netsky, Sasser & Co. Their names are somewhat less cryptic and often originate from employees or service personnel.

These dangers go by the names of carelessness and, in rare cases, maliciousness. What happens is easily explained: input or possibly output plugs of network connections are misconnected. A brief moment of thoughtlessness, a simple pulling at the wrong plug – the consequences are often fatal. Entire departments or companies are down until the network is restored. Furthermore, important data can be lost forever in this manner.

Recognition of need

Such network interruptions can threaten the existence of large concerns working with considerable quantities of critical data. At the very least, however, these interruptions are time consuming and expensive, regardless of the size of the company. Therefore, R&M has developed a three-stage safety system, that provides easy as well as effective protection against link faults. This unique product palette for copper and fiber optic connections prevents mishaps and thus guarantees maximum network availability.

The R&M safety system was welcomed by the Ukrainian Ministry of Transport that is housed in the tallest building in the capital of Kiev. Recently, the building was subjected to a general refurbishment, which included the installation of structured cabling. Guaranteeing maximum failure safety of the network was of utmost importance.

Efficient safety system

A shielded Cat. 5e cabling on a horizontal plane on all 24 floors of the building formed the basis of the R&M solution. A multimode fiber optic backbone was added. The shielded twisted-pair cabling measures 25 kilometers in total and the vertical fiber optic backbone extends across 5.3 kilometers. The system contains 24 distribution points and 4 577 workstations. Each workstation is equipped with "Safe Clip" or "Plug Guard" from R&M. These products, which are part of the modularly configured R&M safety system, effectively prevent the erroneous or malicious disconnection of important data connections. The Safe Clip is a sleeve in signal



The offices of the Ukrainian Ministry of Transport were furnished with structured cabling and approximately 4000 workstations were equipped with an R&M safety system.

color, which is placed over the plug. The Safe Clip must later be removed to make it possible to disconnect the cable from the outlet. Indeed a simple step, however, it effectively prevents accidental disconnecting of important data connections. The Plug Guard goes a step further: once plugged in, the protected contact can only be unlocked with an appropriate key.

In cooperation with R&M Ukraine, the certified R&M partner company ULYS SYSTEM Ltd. performed the project development and installation. Thus, the Ukrainian Ministry of Transport can rely on the cabling, which is guaranteed by R&M with a 20-year system warranty.



Plug Guard from R&M – plug-out protection for RJ45 connections. A locking mechanism secures the connection. It can only be unlocked with a special key.



Safe Clip – solution for copper power cables, which prevents accidental disconnection of the plug even on electronic equipment.

Modern telecommunications in Iran

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More and more importance is attached to further technological development and improvement of the infrastructure in Iran. Recently, to optimize telecommunications, the new ADSL splitter from R&M was introduced, tailored to the specific requirements of the country.

The trend of placing ADSL splitters favors main distributor frames instead of local distribution cabinets, since the racks in the exchanges take up expensive space. As specialists for copper and fiber optic telecommunication connections, R&M presented the CeBIT 2004 ADSL splitter cards for use in the main distributor frames. This innovative product, adjusted to the local conditions, is being used in Iran as of late. Together with the certified partner on location, DPI, a solution was implemented which optimally fulfills the specifically outlined conditions.

Simple connection and easy maintenance

The new products can be quickly and reliably plugged into the connection module of the VS Compact distribution system, thus saving space and costs. For the fastest possible installation in the main distributor frames, the DSL Access Multiplexer (DSLAM) can also be connected to the module from the front. Maintenance and troubleshooting are also a breeze since the connections are individually accessible from the front. Thus, broadband services can be economically integrated, with future reliability, into the existing copper-based networks in Iran with the DSL solutions of R&M.

Increased cost effectiveness

The new ADSL splitter system allows the private access provider, Asre Enteghal Dadeha Co., to clearly reduce the installation costs, and in particular the maintenance costs of its DSL infrastructure. In addition, the modular system can be gradually equipped with splitter modules. Since the infrastructure can be gradually adjusted according to demand, the cost effectiveness for Asre Enteghal Dadeha Co.

is increased. Investments are only necessary according to demand. The DSL structure, once installed, can be expanded economically at any time. Technically, the arrangement of the splitters in the central main distributor frames solves several problems: the reduction of cable and trunk lengths and the saving of additional switching equipment, which leads to considerable cost savings, and furthermore, allows line quality tests in all directions. Thus, the network availability is secured long term. Mr Babak Ghajar, Managing Director of Asre Enteghal Dadeha Co. has been convinced by the many advantages – today, the ADSL splitters of R&M are installed in several main distributor frames in Iran. They also function smoothly in connection with DSLAMS of different manufacturers, such as Alcatel, Siemens and others.

VS Compact at a glance

The VS Compact product line of R&M represents overall a highly compact solution for exchanges and collocation rooms with limited space. Packing densities of up to 4200 pairs per square meter are attainable. Best transmission values (DDF) and a wide variety of construction sizes 2, 8, 10, 16, 20 and 25 pairs characterize the VS Compact. The product can be wired double or stranded. The disconnection contact sites are gold plated to provide maximum reliability and a long service life.

get more The VS Compact ADSL splitter

More comfort and flexibility

- easy installation and replacement
- different splitter card types are available
- DSLAM connections can be pre-assembled

Greater network security

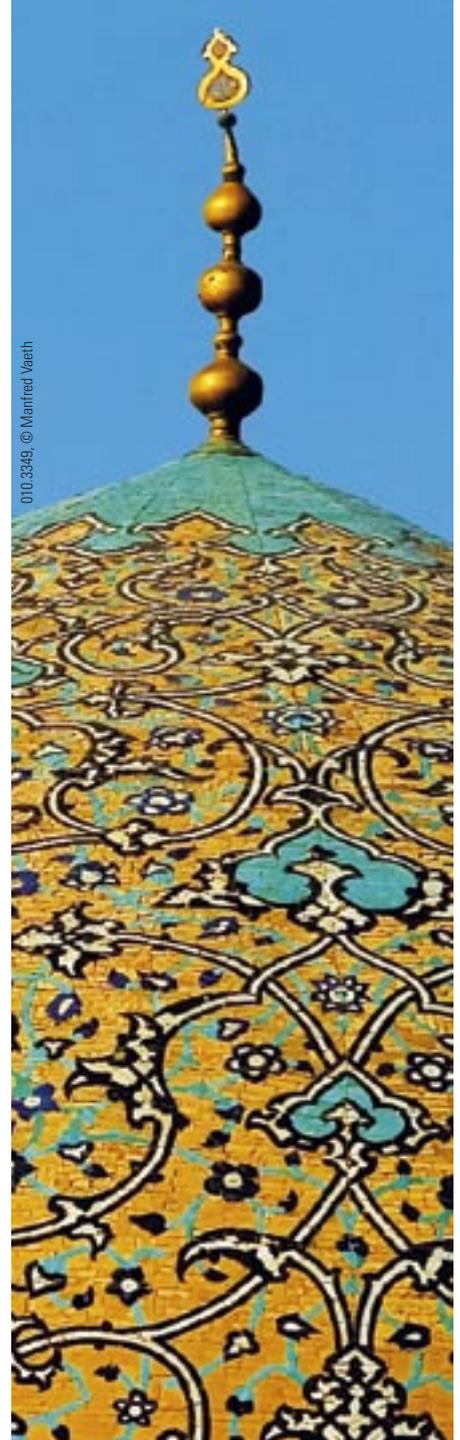
- use of quality components

Increased cost-savings

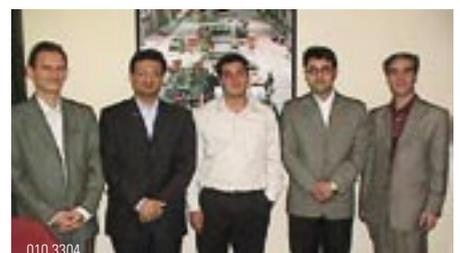
- easily removable
- less cabling
- insertion possible in remote units
- quick installation in the MDF



010.3349, © Manfred Vaeth



090.2115
ADSL-Splitter



010.3304

from left to right: Mr Sarafi (DPI), Mr Aslam Zuberi (R&M), Mr Tamadon (Lazer), Mr Ali Zaker (Lazer), Mr Salimi (DPI)

Direct access to 10 Gigabit Ethernet with Cat. 6

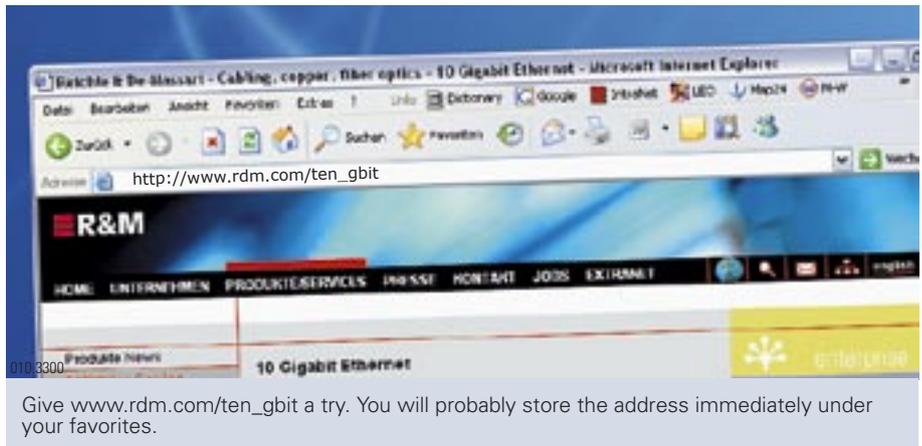
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IT decision makers, planners and network administrators are confronted with a prevailing challenge: 10 Gigabit Ethernet is coming! They must plan data networks for the future, however, the discussion on standards, range and shielding has not yet been concluded. Nevertheless, today they can already build reliable, powerful systems using Cat. 6 components. R&M supplies facts and information online, which are important for the understanding of 10 Gigabit Ethernet (10GbE or 10GBASE-T).

Today, when planning a network with a transmission performance of 10 Gigabit per second, one is confronted with several options. On the one hand there are Cat. 6/Class E solutions with universal compatibility on the market and on the other hand Cat. 7/Class F solutions with RJ45 non-compatible connector systems. Furthermore, at the time of the investment decision, the question as to whether possibly existing unshielded cabling can be used or whether everything needs to be newly laid in which case shielded cables can immediately be used, plays a significant role.

As a pathfinder for the 10 Gigabit Ethernet, R&M offers, apart from the appropriate Cat. 6 solutions, its entire technological know-how, service and consulting



services. We want the market to be fully informed and optimally prepared for this quantum leap. The R&M expert team for 10GBASE-T prepares the current standards and technical discussions in compact expert articles and white papers, which are made available online at www.rdm.com/ten_gbit. Furthermore:

R&M takes a stand

R&M supports all 10GE installations – from fiber optics to shielded and unshielded copper cabling. R&M is active from the outset in the development of standards by collaborating on various standardization committees and in various user organizations. Cat. 6 solutions from R&M, already on the market for a number of years, exceed demonstrably the values for quality and performance required by the current draft standards for 10GBASE-T.

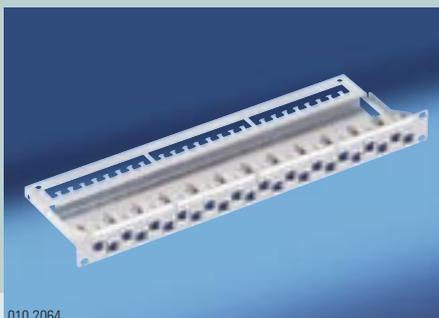
The cables fulfill all expected specifications and the modules are verified by de-embedded testing up to 600 MHz, which is beyond the currently required 500 MHz. The connection modules and patch cords go through a 100 percent unit test. With shielded Class E, R&M provides planners

and technicians with the security that the customer can operate 10 GbE up to a length of 100 meters.

With unshielded Class E, R&M offers a solution superior to standard products available on the market. For example, the staggered arrangement of the connections in the R&M 24-port panel and the “healthy” line distances in the modules indicate that the minimum range of 55 meters can be exceeded. Thus, many customers will be able to use their previous R&M UTP installation for 10GBASE-T, since approximately 75 percent of lines in office buildings are shorter than 55 meters (according to a study by LAN Technologies in July 2003). Therefore, for many customers a remeasurements is all that will be required.

Costs: The shielded Cat. 6 solution can be calculated

UTP is less expensive – when it works. If not, subsequent improvements are necessary. Those costs cannot be calculated in advance. If the network in the end provides a lower transmission security, even more costs will accumulate, which do not appear in any calculation.



R&M 24 port panel

With Cat. 6/unshielded Class E, R&M offers a solution superior to standard products available on the market. For example, the staggered arrangement of the connections in the R&M 24-port panel and the “healthy” line distances in the modules indicate that the minimum range of 55 meters can be exceeded. Thus, many customers will be able to use their previous R&M UTP installation for 10GBASE-T; for many customers a remeasurements is all that will be required.

The initial costs are higher for shielded cabling. This is mostly based on the material and installation expenditures. However, based on extensive experience and high predictability, the installation costs can be calculated exactly.

R&M has designed its Cat. 6 solution for quick and reliable installation. Among the outstanding features are an easy and time-saving patented shielded contact with integrated cable strain relief. To attach a shielded cable to a R&M module takes on average only ten seconds longer than to attach an unshielded cable.

Cat. 6, Cat. 7, shielded, unshielded – does it make any difference for 10 GBASE-T? In its responsibility towards planners, technicians and end customers, R&M must point out the “subtle” differences. Therefore, on www.rdm.com/ten_gbit even the “fine print” is big.

Give www.rdm.com/ten_gbit a try. You will probably store the address immediately under your favorites.

Status of standardization

At the end of November 2004, draft 1.1. of the 10GBASE-T standard was completed and discussed at the meeting of the IEEE 802.3an Task Force in Ottawa. The new standard supports structured cabling via copper wires according to ISO/IEC 11801 or TIA-568-B with a range of up to 100 meters (shielded) or 55 meters (unshielded).

The technical report discussed in the EN and ISO (R&M author) is based on the acceptance of draft 1.1.

Keyword compatibility

The declared goal of the IEEE 802.3 High Speed Study Group for the development of the 10GBASE-T standard was maximum compatibility with previous Ethernet standards. The standard covers transmission and access details, the integration of Power over Ethernet and generally the transmission over four twisted pairs in a structured cabling. R&M offers a solution with its Class E/Cat.6 system, which is also backwards compatible in regard to the connectors.

Shielded or unshielded?

Shielded, 10 GBASE-T has a range of at least 100 meters. With unshielded pairs (UTP) currently only 55 meters can be reached reliably. Particularly external noise presents difficulties, more precisely, the Powersum Alien NEXT. This parameter is insufficiently specified in ISO/IEC or TIA. Both committees have therefore formed project groups to change or supplement appropriately the cabling standards (ISO/IEC 11801, TIA-568-B).

Powersum Alien NEXT is, however, not only a characteristic of cables and modules but also the installation method. The values can only be checked in an installed system – however, at this time, this is unfortunately not

possible, since the appropriate field testing devices are not available. The A NEXT value might be enhanced with expensive subsequent improvements, e.g. by reducing the port density in the distributor, having greater distances between the cables, by improving the cabling systems or by reducing the cable length.

10GBASE-T will, without a doubt, also be possible on unshielded cabling. However, the advantage of the greater filling coefficient in the cable conduit is gone and the installation is much more critical as otherwise with UTP. The base costs for shielded cabling may be greater, but can be planned for.



R&M shielded Cat. 6 connection module

With shielded Cat. 6/Class E modules, already on the market for a number of years, R&M provides planners and technicians with the security that the customer can operate 10 Gigabit Ethernet up to a distance of 100 meters. The cables fulfill all expected specifications and independent laboratories verify the modules with de-embedded testing up to 600 MHz, which is beyond the currently required 500 MHz. All connection modules and patch cords go through a 100 percent unit test before delivery.

Question to the CIO: What is the cost of a network?



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An efficient and well functioning IT infrastructure is becoming ever more important for enterprises. At the same time, however, budgets are becoming tighter. IT managers are faced with the important task of making optimal investment decisions. What then are the parameters to be used for accurately assessing the cost of a network?

The position of IT manager is becoming ever more important in enterprises of all sizes. Important tasks such as investment decisions and management of the IT budget fall within the IT manager's area of responsibility. There is a trend for the role of the IT manager to change from being a technically oriented specialist to becoming a manager with an overview function. The importance of IT for the success of the entire enterprise is continually increasing, in line with the expansion of its capability. But this also means that an enterprise's dependence on the smooth functioning of the IT system increases. A decision in favor of a particular IT system can thus have a decisive influence on the success of the enterprise.

The more important the communication and information technologies become to an enterprise, the more capital resources flow into this area. This means that the IT manager must administer ever larger budgets and consequently must make



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important and far-reaching financial decisions. Relevant knowledge in the area of finance has therefore become a prerequisite to be able to correctly assess IT investments and to implement them in the enterprise.

Although the information technology share in overall investment is continually on the rise, the importance of technical specialists in the enterprise is likely to decline. IT experts will be making more finance-related decisions and will thus have to acquire additional qualifications in this field. This goes hand in hand with the creation of a new function in top management, namely that of the Chief Information Officer, CIO. In the words of the Swiss "Chief Information Officers Club": "Information management is the optimal creation of information activities

in a field of application by means of information- and communication technology. Information management (IM) relates to systems, managerial tasks and operational processes which deal with information and communication in a targeted way. IM tasks are of a strategic, tactical and operational nature. Steering the potential information supply towards the success of the enterprise thanks to a suitable design and use of information infrastructures is the strategic aim of IM."

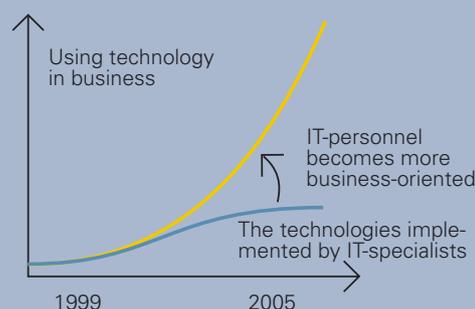
Total Cost of Ownership (TCO)

To correctly assess the cost of an IT investment, the CIO should not only take into account the purchase price of the investment, but also the cost for operating the investment during its entire lifetime. The Total Cost of Ownership (TCO) method, developed by the Gartner Group in the late 1980s, is the best way to calculate this.

To an IT manager, Total Cost of Ownership (TCO) is a key factor in putting a case to the board and partners or shareholders of an enterprise. TCO is used to substantiate the overall costs of IT projects, justify IT budgets, and underpin the services of the IT division. Calculating the TCO helps achieve significant management objectives, for example:

- increasing the profitability of IT investments
- reducing the outlay for the existing IT infrastructure, thus freeing up resources for other investments.

In spite of the fact that the total volume of IT consumption will increase, the role of technical specialists particularly in its applications will be decreasing gradually. As the result, the IT specialists will become more oriented towards business decision making, that will demand additional skills and qualification from them.



The trend of IT managers' transition from traditional technical specialists to business managers (source - Forrester Research)

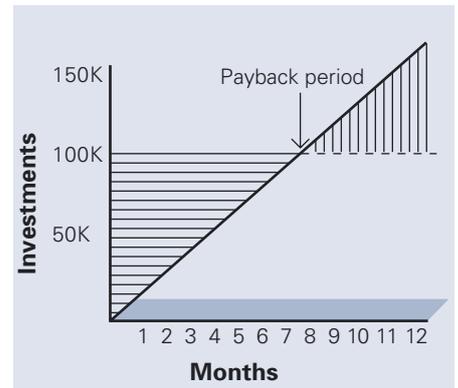
In the field of structural cabling of buildings, in the medium to long term, such factors as performance, tolerance values, dependability and load capacity are decisive. In this context, the question inevitably arises whether it is more economical to decide in favor of the solution of a quality leader who guarantees proper functioning, or to opt for a cheaper variant which may in the future incur costs as a result of functional deficiencies.

An analysis of TCO shows that the initial extra cost of a high-quality cabling solution is more than recouped by such a solution's advantages: proper functioning over its entire lifespan, no network failures with the resulting costs for downtime in the enterprise, and no data loss. Conversely, such an analysis shows that the costs of what initially might appear to be an economical solution might dramatically increase over its entire lifespan. The purchase price on its own is thus not an adequate criterion for deciding in favor of one competitor over another. Installing a network solution which comes with a low purchase price may well be a false economy. Clearly, any perceived price advantage may quickly turn into a disadvantage as a result of network failures or data loss.

Return on investment (ROI)

The overall cost of an IT system during its lifetime is however not the only factor to be considered. The positive effects, too, namely the sum of additional gains made with an IT investment, should also have a bearing on the purchase decision. The IT area can make a significant contribution to improving the efficiency of enterprise processes and to reducing costs in other areas. On the other hand, ill-considered IT savings can reduce efficiency and profitability. Return on investment (ROI) is thus an important factor in calculating the cost of an investment.

ROI designates the characteristic number which provides information on the gains in interest on principal within a particular period of time. ROI denotes the return per unit of invested capital. The time span can be limited or it can include the total service life of the investment. To provide a positive ROI it is recommended that projects be carried out in small steps with clear objectives and short-term results. Companies such as Glomark or ClOview provide special software for calculating ROI. For example, Glomark's Genius system is a software package which makes it possible to calculate investment variants, compare competing technologies, and calculate the expected return. Another



product, called ROInow, has a modular structure which makes it possible to evaluate the efficiency of capital investment in IT projects. These two applications not only calculate ROI, but also other characteristic numbers which provide information on the profitability of an investment.

It is not always possible to calculate the ROI with complete precision. It can for example happen that certain innovations are accompanied by unexpected positive side effects (increased customer loyalty, enhanced brand image). However, despite such grey areas, the calculation of ROI is an important factor in putting a case to top management. At any rate, the importance of IT investments to the enterprise means that these days expertise in financial matters is imperative for IT managers. This is not only a prerequisite for implementing important projects in the enterprise, but also an entry ticket to top management.

From January 2005 Peter Reznichenko holds the position of Managing Director of R&M Ukraine.

Savings / expenses	Monetary units
Input data:	
- Monthly expenses on traditional phone services	54 101
- Factor of voice flow transfer into data network 95%	0.95
- Monthly savings on traditional phone services	51 396
- Monthly expenses on required additional network carrying capacity	32 164
- Nonrecurring network modernization investments	127 500
- Cost of equipment installation (by project)	20 000
- Total capital investments	147 500
Calculations:	
- Total monthly savings correspond to the difference between monthly savings and monthly costs on increasing network carrying capacity	19 232
- Total expected costs decrease for the period of 24 months amounts to	461 568
- For calculation of payback period it is necessary to divide the total capital investments by total monthly savings	7.7 month
- Expected investment return over a first period of 24 months: ROI = (Costs decreasing/capital investments) - 1*)	213 %
*) The formula may be modified depending upon business type.	
Example of the calculation of economical expediency and payback period for a European corporation implementing a network modernization project that implies transition of voice data flow into the Frame Relay network. (source: Cisco).	

IT security starts at layer 1

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Today, information security is everyone's concern. The security of a chain is determined by the weakest link. For information security, security is determined in analogy to the least protected component in the entire information system. The question is: Does this include cables and connectors?

What are the goals for information security?

Today, information is the central value of companies and the sum of all information on a person is perhaps more determining than the free will of the person him/herself. For example: If one has all the information on a company and sufficient investment capital, the product of this company can be produced more cheaply in another country or the same product can be produced domestically, only with better and more aggressive marketing. This makes it clear that information is the essence of life today. The pivotal question is, whether we sufficiently take into account our information on all levels. The European Union attributes so much importance to this question, that as of 2006, one billion Euro per year will be invested in research in relevant security fields.

Logical security and awareness (security awareness)

Most people are familiar with the fear of total data loss (corrective measure – backup), of viruses (corrective measure – virus protector), of network attacks (corrective measure – firewall). Less known are:

- the Spyware programs, which are introduced into the PCs on the application level and make all data permanently accessible from the outside to the attacker (corrective measure – anti-Spyware)
- Phishing, overall term for all methods, which extract the secret codes of people
- social engineering, a method, to capitalize on the good faith and helpfulness of people in order to subsequently carry out successfully attacks on the information.



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In the statistics of the American Federal Bureau of Investigation (FBI), social engineering emerges as a participation of trustworthy intranet users in recorded computer criminality. This is the case in 80% of the reported and investigated cases! Consequently, we can only be trusting in a limited manner and must be very careful. The convenience, which results from a trusting contact must be rethought and a situational decision must be made between convenience and security. Unpleasant, but unfortunately true!

Physical security

The essential assets of a company must also be protected physically (constructionally from theft). Top security computer rooms are well known from the film industry: access verification with a hierarchical sorting system, identity checks, finger prints, eye scans, many meters of concrete and bulletproof glass. No doubt, there must be something extremely valuable behind all this!

Value of Information

Today, the value features of information are generally recognized and defined by their permanent accessibility, the limitation to a defined circle of people, who may look at the information (confidentiality) and the correctness of the information in regard to all aspects (integrity). In other words, secure information is available, confidential and has integrity.

Security influence of cables and connector systems

Today, a small interruption at a decisive point of a connector or a cable can make

entire computer centers inaccessible for the user. Such downtime is expensive and costs companies between 1 and 4 francs per minute and a loss in employee productivity. Not to speak of possible claims of third parties, who invoke claims due to interruption in service and just-in-time damages. Availability losses can be greatly reduced with high quality connector and cable products, which are expertly manufactured. Correctly designed cable and

get more R&M security system

Greater network security

- mechanical and color coding prevents erroneous network connections
- lock mechanism allows authorized plug-in and plug-out protection

More modularity and flexibility

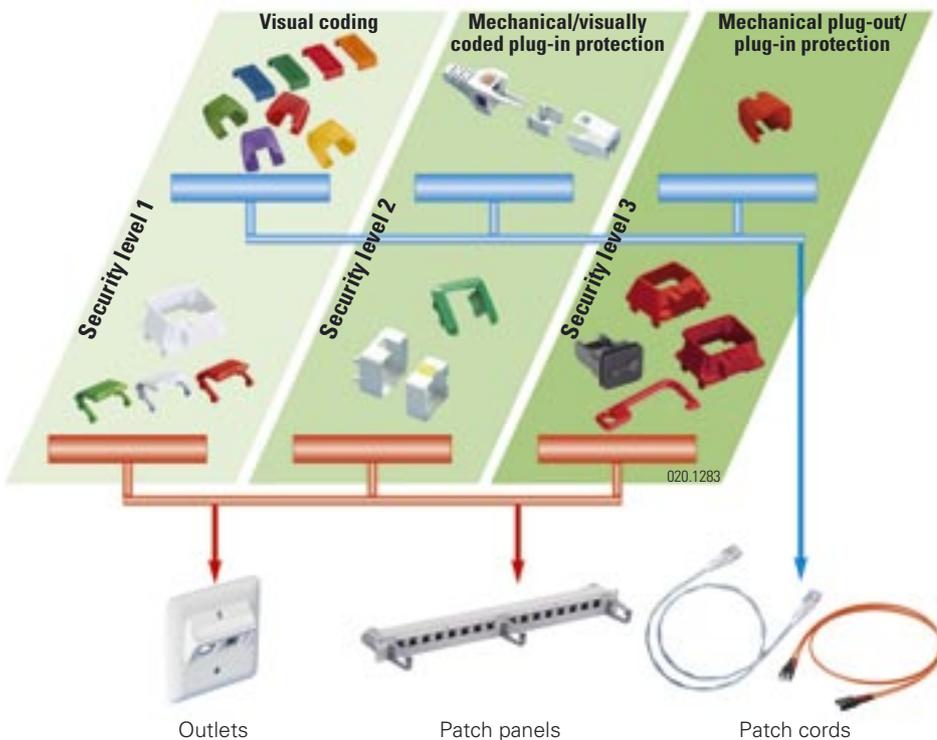
- compatible with RJ45 copper & SC-RJ fiber components
- easy upgrading and retrofitting thanks to R&M Smartholes

Convenience

- tool-free installation



Modularity of the R&M security system at a glance:



Security on three levels

The R&M security system offers you three security levels:

1. visual coding, 2. mechanical and visual coding, 3. intelligent protection with lock mechanism, only accessible to network administrator with appropriate key.

– **Security level 1:** Visual coding reduces the danger of a mix-up and supports the correct connection of the copper and optical fiber patch cords.

– **Security level 2:** Mechanical and visual coding doubles the security. Erroneous plug-in is impossible. The danger of a mix-up is eliminated.

– **Security level 3:** Lock mechanisms prevent unauthorized manipulation in an intelligent manner. Connections can only be disconnected or plugged in by trained network administrators with the appropriate key.

connector systems also have a much better resistance against electromagnetic interference. Error transmissions and the probability of bit transmission errors can be greatly limited.

Security of wireless and wired systems

The usual comparison between cable and wireless transmission (today often wireless LAN) is only conditionally accurate. For example the configuration WEP (wired equivalent privacy, with cable comparable privacy) is only conditionally certain. Firstly, this configuration can be removed with tools from the Internet in a maximum of 15 minutes and secondly, contrary to the cable, no access to the building is necessary: special antennas can receive these signals, even from a distance of one kilometer! Of course, the cable and connector system is superior to wireless LAN in respect to the circle of people, who have direct access, and in respect to confidentiality. However, it must be pointed out that for both systems high confidentiality can only be achieved with high-quality coding. The system stability

is significantly greater due to the clearly lower interference rate in the cable. Furthermore, the transmission rates are between 20 and 100 times greater with cable/connector systems.

Laws for infrequent actions

It is generally known that infrequent actions, which must be 100% correct are a particularly sensitive matter. Constant practice is usual for pilots, fire departments and for those coping with disasters. All actions in the cable and connector technology are infrequent. Permanent upkeep of all cable runs and connector positions as well as the absolute up-to-date documentation of all connections, today, represents more good intention than absolute fact. Every support, which provides more security in this area is absolutely desirable and serves the higher-ranking objectives of reliable communication.

The upshot is that reliable communication requires great care and attentiveness on all levels and must always be considered globally. Availability can be support-

ed with appropriate cable and connector systems. Only a strong cryptography represents high protection for confidentiality and protection from unauthorized access. However, connectors and cables demonstrate some advantages compared to wireless solutions. In particular, cable systems provide greater security, in any case, for the end user.

R&M trade fair appearances through October 2005:

CeBIT, Hanover, Germany

March 10–16, 2005

Zhejiang Intern. Intelligent Building, Hangzhou, China

April 7–9, 2005

Gitex, Riyadh, Saudi Arabia

April 24–28, 2005

Elfack 2005, Göteborg, Sweden

April 25–29, 2005

CommunicAsia, Singapore

June 14–17, 2005

ANJA, Bandung, Indonesia

August, 2005

ECOC 2005, Glasgow, Scotland

September 26–28, 2005

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Convincing cabling solutions